

Improving the health properties of soy foods by the genetic modification of soybean plants

Anthony J. Kinney

Pioneer Crop Genetics Research, DuPont Experimental Station, Wilmington DE 19880-0402 USA

Many people have increased their consumption of soy-based foods in recent years in response to the perceived health benefits from consuming soybean protein. Research attention has been focused on the oil component of the soybean to provide health benefits that might complement the positive effect of soy protein in the diet. Initial approaches were based on the concept of changing the existing ratios of the fatty acids in the plant triacylglycerol to make healthier cooking oils. The result has been the production of soybean oils with a reduced saturated fatty acid content and with a greatly reduced acid ratio of omega-6 to omega-3 fatty acids. In addition to improving the balance of polyunsaturated acids in the diet, this latter oil is oxidatively stable and can be used as a substitute for partially hydrogenated oils in many foods thus helping eliminate *trans* fatty acids from the diet. More recent efforts to mine the biodiversity of the plant and microbe kingdoms has uncovered new genes that can be used to produce novel fatty acids in soybean oil. These new fatty acids may provide a source of health-promoting ingredients for soy protein-based foods. Examples of these new fatty acids include conjugated fatty acids and long-chain omega-3 polyunsaturated fatty acids.